

# इंटरनेट

# मानक

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Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 10887 (2001): Steel Wire Ropes for Winches and Ropeways  
Used in Forestry and Agriculture [MED 10: Wire Ropes and  
Wire Products]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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भारतीय मानक  
वानिकी और कृषि में प्रयुक्त विन्यों और रोपवे के लिए  
इस्पात वायर रोप — विशिष्टि  
( पहला पुनरीक्षण )

*Indian Standard*  
STEEL WIRE ROPES FOR WINCHES AND ROPEWAYS  
USED IN FORESTRY AND AGRICULTURE —  
SPECIFICATION  
( *First Revision* )

ICS 65.020.01; 77.140.25

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**BUREAU OF INDIAN STANDARDS**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

## FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Wire Ropes and Wire Products Sectional Committee had been approved by the Mechanical Engineering Division Council.

This standard was first issued in 1983 to cater to the demand of increased use of wire ropes for forestry and agricultural purposes. The experience gained in the implementation since its issue has necessitated the present revision. In this revision symbolic representation of different types of construction of wire ropes has been modified. Requirement for lubrication has been added. Based on the revised mass factor  $K$  and breaking force factor  $K'$  as given in IS 6594 : 2001 'Technical supply conditions for steel wire ropes and strands (*second revision*)', mass and breaking force of ropes have been modified.

The composition of the committee responsible for the formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard*

**STEEL WIRE ROPES FOR WINCHES AND ROPEWAYS  
USED IN FORESTRY AND AGRICULTURE —  
SPECIFICATION**

*( First Revision )*

**1 SCOPE**

This standard covers requirements for wire ropes for winches and ropeways used in forestry and agriculture. The following rope constructions, types, rope/strand grade, core and size ranges are covered ( identified by × mark ):

*IS No.*

6594 : 2001

*Title*

Technical supply conditions for steel wire ropes and strands ( *second revision* )

**3 TERMINOLOGY**

For the purpose of this standard the definitions given

Construction	Type	Rope/Strand Grade		Core		Size Range mm	Table No.
		1420	1570	Fibre	Steel		
6 × 7 ( 6–1 )	Round strand	×	×	×	—	6 to 18	1
6 × 19 M ( 12/6–1 )	Round strand	—	×	×	×	6 to 18	2
6 × 25 F ( 12–6F–6–1 )	Round strand	—	×	×	×	6 to 18	3
6 × 19 S ( 9–9–1 )	Round strand	—	×	×	×	6 to 18	4
6 × 26 SW ( 10–5+5–5–1 )	Round strand	—	×	×	×	8 to 16	5
6 × 31 SW ( 12–6+6–6–1 )	Round strand	—	×	×	×	8 to 16	5
6 × 36 SW ( 14–7+7–7–1 )	Round strand	—	×	×	×	8 to 16	5
1 × 7 ( 6–1 )	Spiral strand	×	—	—	—	6 to 12	6
1 × 19 M ( 12/6–1 ) or 1 × 19 J ( 12 : 6–1 )	Spiral strand	×	—	—	—	6 to 12	7

**2 REFERENCES**

The following standards contain provisions, which through reference in this text constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

*IS No.*

*Title*

2363 : 1981

Glossary of terms relating to wire ropes ( *first revision* )

in IS 2363 shall apply.

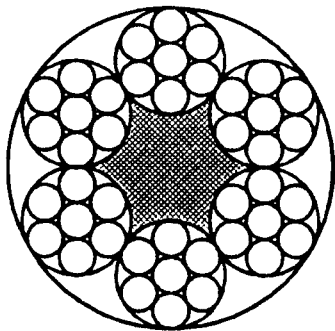
**4 ROPE SIZE AND TOLERANCE**

The size of the rope/strand, designated as ‘nominal diameter’ shall be one of those given in Tables 1 to 7. The actual diameter of the rope as supplied shall be within + 4, – 1 percent of the nominal diameter for round strand ropes and + 4, – 0 percent of the nominal diameter for spiral strands.

**5 MINIMUM BREAKING FORCE**

The minimum breaking force of the ropes and strands shall be as given in Tables 1 to 7.

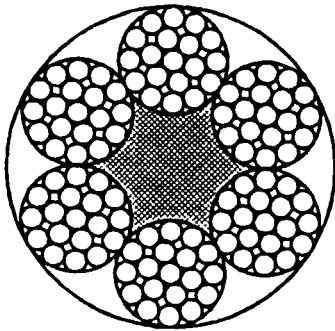
Table 1 Mass and Breaking Force for 6 × 7 ( 6–1 ) Construction Rope with Fibre Core  
( *Clauses 4 and 5* )



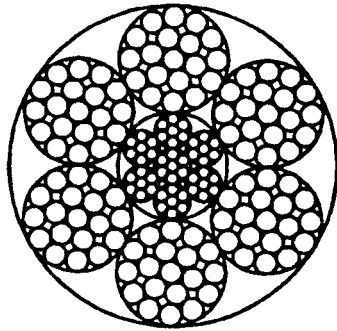
6×7(6–1)–CF

Nominal Rope Diameter	Approximate Mass	Minimum Breaking Force for the Rope Grade of	
		1420	1570
	Fibre Core (CF)	Fibre Core (CF)	
(1)	(2)	(3)	(4)
mm	kg/100 m	kN	kN
6	12.9	17	19
7	17.5	23	26
8	22.9	30	33
9	28.9	38	42
10	35.7	47	52
11	43.2	57	63
12	51.5	68	75
14	70.1	92	102
15	80.4	106	117
16	91.5	121	134
18	116	153	169
NOTES			
1 To calculate the aggregate breaking force multiply the values given in col 3 and 4 by 1.111.			
2 The values for masses are for guidance only.			

**Table 2 Mass and Breaking Force for 6 × 19 M ( 12/6-1 ) Construction Rope with Fibre and Steel Core**  
( *Clauses 4 and 5* )



6 × 19 M ( 12/6-1 )-CF



6 × 19 M ( 12/6-1 )-CWR

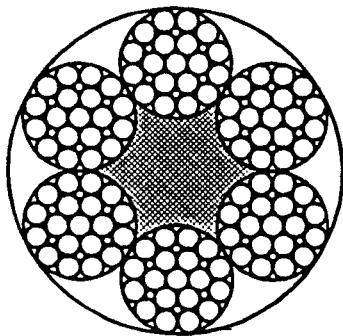
Nominal Rope Diameter	Approximate Mass		Minimum Breaking Force for the Rope Grade of 1570	
	Fibre Core	Steel Core	Fibre Core	Steel Core
	(CF)	(CWR)	(CF)	(CWR)
(1)	(2)	(3)	(4)	(5)
mm	kg/100 m		kN	kN
6	12.5	13.7	17	19
7	17.0	18.6	24	26
8	22.1	24.4	31	33
9	28.0	30.8	39	42
10	34.6	38.1	48	52
11	41.9	46.1	58	63
12	49.8	54.8	69	75
14	67.8	74.6	95	102
15	77.9	85.6	109	117
16	88.6	97.4	124	133
18	112	123	156	169

**NOTES**

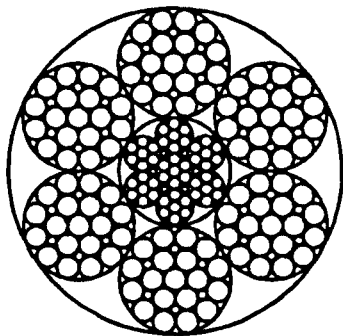
- 1 To calculate the aggregate breaking force multiply the values given in col 4 by 1.163 and col 5 by 1.25.
- 2 The values for masses are for guidance.



Table 3 Mass and Breaking Force for 6 × 25 F ( 12-6F-6-1 ) Construction Rope with Fibre  
and Steel Core  
( Clauses 4 and 5 )



6x25 F ( 12-6F-6-1 )-CF

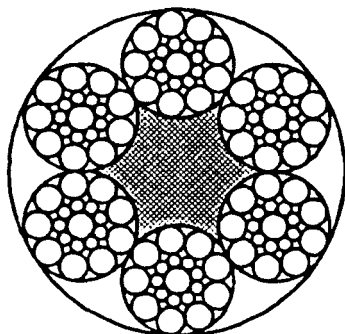


6x25 F ( 12-6F-6-1 )-CWR

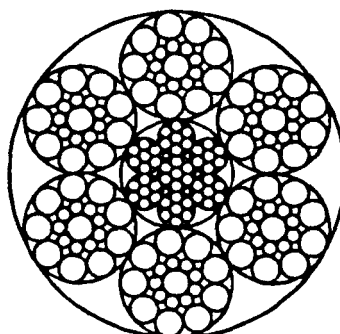
Nominal Rope Diameter	Approximate Mass		Minimum Breaking Force for the Rope Grade of 1570	
	Fibre Core	Steel Core	Fibre Core	Steel Core
	(CF)	(CWR)	(CF)	(CWR)
(1)	(2)	(3)	(4)	(5)
mm	kg/100 m		kN	kN
6	13.7	15.1	19	21
7	18.6	20.5	26	28
8	24.3	26.8	34	37
9	30.8	33.9	43	46
10	38.0	41.8	53	57
11	46.0	50.6	64	68
12	54.7	60.2	76	82
14	74.5	82.0	104	112
15	85.5	94.1	119	129
16	97.3	107	136	147
18	123	135	172	186
NOTES				
1 To calculate the aggregate breaking force multiply the values given in col 4 by 1.163 and col 5 by 1.25.				
2 The values for masses are for guidance only.				

**Table 4 Mass and Breaking Force for  $6 \times 19$  S (9-9-1) Construction Rope with Fibre and Steel Core**

( Clauses 4 and 5 )



$6 \times 19$  S (9-9-1)-CF



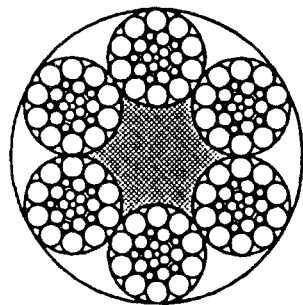
$6 \times 19$  S (9-9-1)-CWR

Nominal Rope Diameter	Approximate Mass		Minimum Breaking Force Corresponding to Rope Grade of 1570	
	Fibre Core	Steel Core	Fibre Core	Steel Core
	(CF)	(CWR)	(CF)	(CWR)
(1)	(2)	(3)	(4)	(5)
mm	kg/100 m		kN	kN
6	13.4	14.8	19	20
7	18.3	20.1	25	27
8	23.8	26.2	33	36
9	30.2	33.2	42	45
10	37.3	41.0	52	56
11	45.1	49.6	63	68
12	53.7	59.0	75	81
14	73.0	80.3	102	110
15	83.8	92.2	117	126
16	95.4	105	133	144
18	121	133	168	182

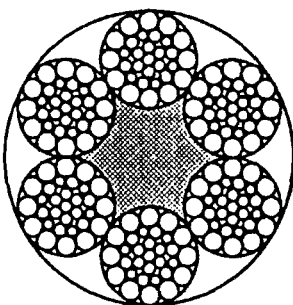
**NOTES**

- 1 To calculate the aggregate breaking force multiply the values given in col 4 by 1.163 and col 5 by 1.25.
- 2 The values for masses are for guidance only.

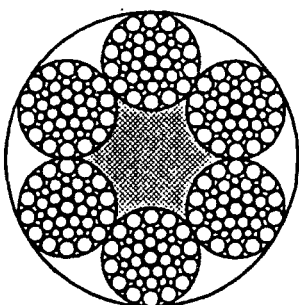
Table 5 Mass and Breaking Force for 6 × 26 SW ( 10-5+5-5-1 ) 6 × 31 SW ( 12-6+6-6-1 )  
and 6 × 36 SW ( 14-7+7-7-1 ) Construction Rope with Fibre and Steel Core  
( Clauses 4 and 5 )



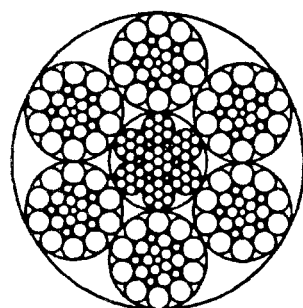
6x26 SW (10-5+5-5-1)-CF



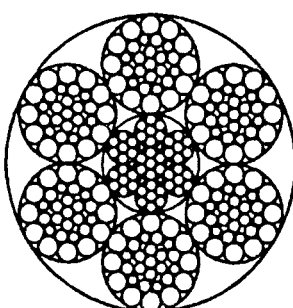
6x31 SW (12-6+6-6-1)-CF



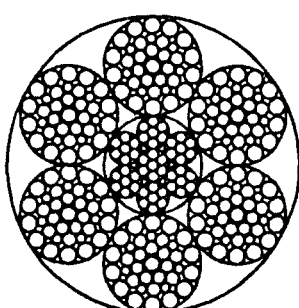
6x36 SW (14-7+7-7-1)-CF



6x26 SW (10-5+5-5-1)-CWR



6x31 SW (12-6+6-6-1)-CWR



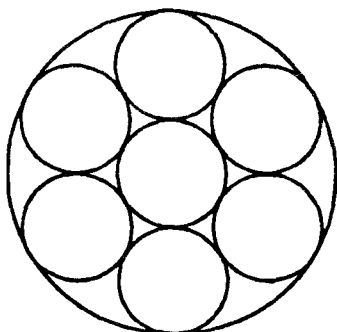
6x36 SW (14-7+7-7-1)-CWR

Nominal Rope Diameter	Approximate Mass		Minimum Breaking Force Corresponding to Rope Grade of 1570	
	Fibre Core	Steel Core	Fibre Core	Steel Core
	(CF)	(CWR)	(CF)	(CWR)
	(1)	(3)	(4)	(5)
mm	kg/100 m		kN	kN
8	24.3	26.8	33	36
9	30.8	33.9	42	45
10	38.0	41.8	52	56
11	46.0	50.6	63	68
12	54.7	60.2	75	81
14	74.5	82.0	102	110
15	85.5	94.1	117	126
16	97.3	107.1	133	143

NOTES

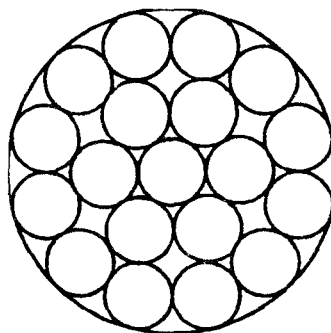
- 1 To calculate the aggregate breaking force multiply the values given in col 4 by 1.19 and col 5 by 1.28.  
2 The values for masses are for guidance only.

**Table 6 Mass and Breaking Force for  
1 × 7 ( 6-1 ) Construction Spiral Strand**  
( *Clauses 4 and 5* )



1×7(6-1)

**Table 7 Mass and Breaking Force for  
1 × 19 M ( 12/6-1 ) or 1 × 19 J ( 12:6-1 )  
Construction Spiral Strand**  
( *Clauses 4 and 5* )



1×19 M (12/6-1)  
1×19 J (12:6-1)

Nominal Strand Diameter	Approximate Mass of Strand	Minimum Breaking Force Corresponding to Strand Grade of 1420
(1)	(2)	(3)
mm	kg/100 m	kN
6	18.1	28
7	24.6	38
8	32.1	49
9	40.7	63
10	50.2	77
11	60.7	94
12	72.3	111

**NOTES**

- 1 To calculate the aggregate breaking force multiply the values given in col 3 and 4 by 1.111.
- 2 The values for masses are for guidance only.

Nominal Strand Diameter	Approximate Mass of Strand	Minimum Breaking Force Corresponding to Strand Grade of 1420
(1)	(2)	(3)
mm	kg/100 m	kN
6	17.8	27
7	24.3	37
8	31.7	48
9	40.1	60
10	49.5	75
11	59.9	90
12	71.3	107

**NOTES**

- 1 To calculate the aggregate breaking force multiply the values given in col 3 by 1.136.
- 2 The values for masses are for guidance only.

## 6 GENERAL REQUIREMENTS

The ropes and strands shall conform to IS 6594.

## 7 LUBRICATION

All wire ropes and strands shall be lubricated with a suitable compound during the manufacturing process.

## 8 TESTS

The ropes and strands shall meet the test requirements laid down in IS 6594.

## 9 MARKING

**9.1** The size, construction, rope grade, lay, core, coating and length of wire rope, reel/coil number along with the order number of purchaser and any other marking which may be specified by the purchaser shall be legibly

mentioned on a suitable tag securely attached, when wire ropes are supplied in coils. In case wire ropes are supplied in reels, the information may be stenciled on both sides of the reels or stenciled on one side of the reel and a suitable tag giving the same information may be attached on the other side of the reel.

### 9.2 BIS Certification Marking

**9.2.1** The product may also be marked with the Standard Mark.

**9.2.2** The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which a licence for the use of Standard Mark may be granted to the manufacturers or the producers may be obtained from the Bureau of Indian Standards.

## ANNEX A

## ( Foreword )

## COMMITTEE COMPOSITION

## Wire Ropes and Wire Products Sectional Committee, ME 10

<i>Organization</i>	<i>Representative(s)</i>
Directorate General of Mines Safety, Dhanbad	SHRI D. SAHA ( <i>Chairman</i> ) SHRI DINESH PANDEY ( <i>Alternate</i> )
Aerial Ropeway and Mechanical Handling Co Pvt Ltd, Kolkata	SHRI A. K. KINRA SHRI RANJAN MUKHERJEE ( <i>Alternate</i> )
Amar Promoters Pvt Ltd, Solan	SHRI VIRENDER AGARWAL
Bharat Coking Coal Ltd, Dhanbad	SHRI R. K. PRASAD
Bharat Wire Ropes Ltd, Mumbai	SHRI D. M. SHAH
Central Mining Research Institute, Dhanbad	SHRI S. P. CHAUDHARY SHRI R. P. CHAKRABORTY ( <i>Alternate</i> )
Directorate General of Aeronautical Quality Assurance, New Delhi	SHRI S. B. PRASAD SHRI SANJAY CHAWLA ( <i>Alternate</i> )
Directorate General of Civil Aviation, New Delhi	SHRI R. C. SHARMA SHRI. N. M. WALECHA ( <i>Alternate</i> )
Directorate General of Supplies and Disposals, New Delhi	SHRI M GANGARAJU SHRI S. M. MUNIAL ( <i>Alternate</i> )
Eastern Coalfields Ltd, Kolkata	SHRI H. K. CHAKRABORTY
Fort William Industries Ltd, Hooghly	SHRI I. N. BANERJEE SHRI J. L. RATHI ( <i>Alternate</i> )
JCT Ltd ( Steel Division ), Hoshiarpur	SHRI MANMOHAN SINGH SHRI S. K. SETH ( <i>Alternate</i> )
Ministry of Defence ( Naval ), New Delhi	CDR BRAHMASWAROOP SHRI B. L. KHDWAL ( <i>Alternate</i> )
Ministry of Surface Transport, New Delhi	SHRI G. P. ROY SHRI T. K. DUTTA ( <i>Alternate</i> )
National Test House, Ghaziabad	SHRI D. S. MAJUMDAR SHRI B. N. SARKAR ( <i>Alternate</i> )
North Eastern Coalfields Ltd, Kolkata	SHRI A. TIRKEY
Oil and Natural Gas Commission, Dehra Dun	SHRI R. K. GARG SHRI P. K. SOOD ( <i>Alternate</i> )
Research, Designs and Standards Organization, Lucknow	DEPUTY DIRECTOR ( STANDARDS )
South Eastern Coalfields Ltd, Bilaspur	SHRI S. K. MISHRA SHRI G. RAMASWAMI ( <i>Alternate</i> )
Usha Breco Ltd, Kolkata	SHRI AMIT KUMAR BASU SHRI C. K. KARMAKAR ( <i>Alternate</i> )
Usha Martin Industris Ltd, Ranchi	SHRI RANA PRATAP SHRI K. K. SENGUPTA ( <i>Alternate</i> )
Vidarbha Hardware Industries, Akola	SHRI O. P. DALMIA SHRI SANJAY K. DALMIA ( <i>Alternate</i> )
BIS Directorate General	SHRI M. L. CHOPRA, Director and Head ( MED ) [ Representing Director General ( <i>Ex-officio</i> ) ]

*Member-Secretary*

SHRI P. VENKATESWARA RAO  
Joint Director (MED), BIS

## Bureau of Indian Standards

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

This Indian Standard has been developed from Doc : No. ME 10 ( 475 ).

#### Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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